

<FLOWCHART FOR DOCUMENT DISPLAY PROCESS
 OF FIRST EMBODIMENT>

FIG. 3

<REGISTRATION OF STRUCTURED DOCUMENT>

√301

<! DOCTYPE DOCUMENT SYSTEM "DOCUMENT. dtd">

<DOCUMENT>

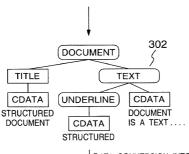
<TITLE> STRUCTURED DOCUMENT </TITLE>

<TEXT>

<UNDERLINE> STRUCTURED </UNDERLINE> DOCUMENT IS A TEXT....

</TEXT>

</DOCUMENT>

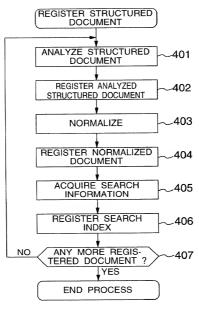


DATA CONVERSION INTO
TABLE FORMAT

303

ELEMENT ID	ELEMENT TYPE	TAG	CONTENT
0	DOCUMENT	DOCUMENT	SUBELEMENT: 1, 3
1	ELEMENT	TITLE	SUBELEMENT: 2
2	CDATA	_	CHARACTER STRING: "STRUCTURED DOCUMENT"
3	ELEMENT	TEXT	SUBELEMENT: 4, 6
4	ELEMENT	UNDERLINE	SUBELEMENT: 5
5	CDATA	_	CHARACTER STRING: "STRUCTURED"
6	CDATA	_	CHARACTER STRING: "DOCUMENT IS

FIG. 4



<FLOWCHART OF REGISTRATION OF
 STRUCTURED DOCUMENT>

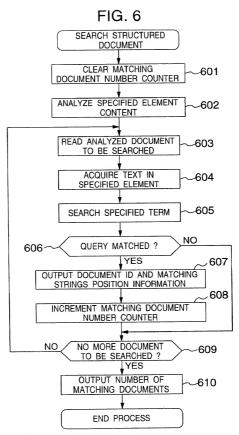
FIG. 5

<TEXT FOR SEARCH>

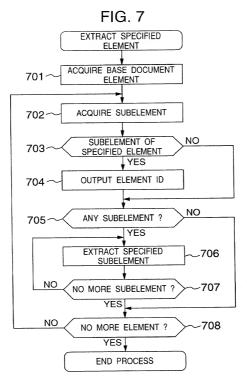
ELEMENT ID	START CHARACTER POSITION	CHARACTER STRING LENGTH
2	0	10
5	10	6
6	16	44
:	:	:

<CHARACTER STRING>

STRUCTURED DOCUMENT IS

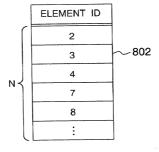


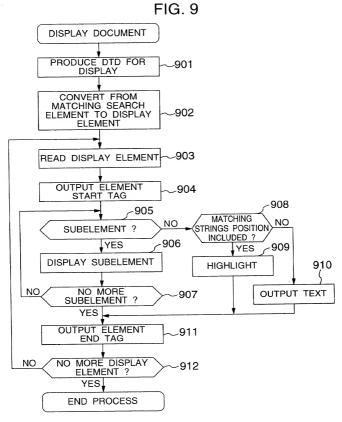
<FLOWCHART FOR SEARCH OF STRUCTURED DOCUMENT>



<FLOWCHART FOR EXTRACTION OF SPECIFIED ELEMENT>

ELEMENTS	N	801

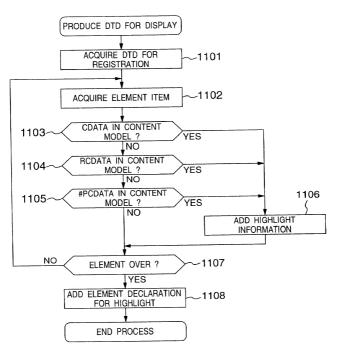




<FLOWCHART FOR DISPLAY OF STRUCTURED DOCUMENT>

```
<EXAMPLE OF STRUCTURED DOCUMENT>
                                                    1001
[DTD] (DOCUMENT, dtd)
     <!ELEMENT DOCUMENT...(TITLE, TEXT)>
                           ... CDATA>
     <!ELEMENT TITLE
     <!ELEMENT TEXT
                           ... (#PCDATA I UNDERLINE)*>
      1002
IDOCUMENT INSTANCE!
   <!DOCTYPE DOCUMENT SYSTEM "DOCUMENT. dtd">
   <DOCUMENT>
   <TITLE> STRUCTURED DOCUMENT </TITLE>
   <TEXT>
   <UNDERLINE> STRUCTURED </UNDERLINE> DOCUMENT IS
   A TEXT....
   </TEXT>
   </DOCUMENT>
                                SEARCH AND DISPLAY
                                "STRUCTURED DOCUMENT"
    <EXAMPLE OF HIGHLIGHTED STRUCTURED DOCUMENT>
                                                     1003
[DTD] (DISPLAY, dtd)
      <!ELEMENT DOCUMENT . . . (TITLE, TEXT)>
                        ...(#PCDATA | HIGHLIGHT)*>
      <IFI FMENT TITLE
                        ... (#PCDATA | UNDERLINE | HIGHLIGHT)*>
      <!FLEMENT TEXT
      <!ELEMENT UNDERLINE . . . (#PCDATA | HIGHLIGHT)*>
      <!ELEMENT HIGHLIGHT>... (#PCDATA)
                                                    1004
 IDOCUMENT INSTANCE
    <IDOCTYPE DOCUMENT SYSTEM "DISPLAY. dtd">
    <DOCUMENT>
    <TITLE> < HIGHLIGHT> STRUCTURED DOCUMENT </ HIGHLIGHT> </ TITLE>
    <TEXT>
    <UNDERLINE> < HIGHLIGHT> STRUCTURED </HIGHLIGHT> </UNDERLINE>
    <hIGHLIGHT > DOCUMENT </HIGHLIGHT > IS A TEXT . . . .
    </TEXT>
    </DOCUMENT>
```

FIG. 11



<FLOWCHART FOR PRODUCING DTD FOR DISPLAY>

FIG. 12
<NORMALIZE FOR SEARCH OF STRUCTURED DOCUMENT>

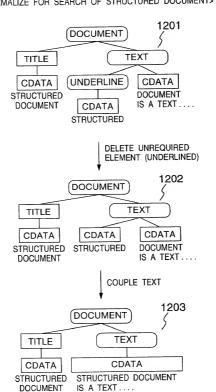
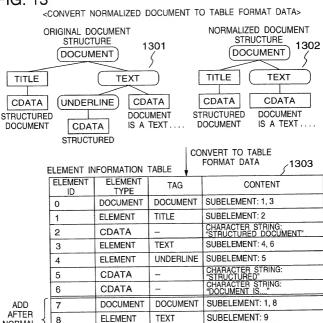


FIG. 13

NORMAL-

IZATION

9



CORRESPONDENCE TABLE	FOR	NORMALIZATION
----------------------	-----	---------------

CDATA

1	304

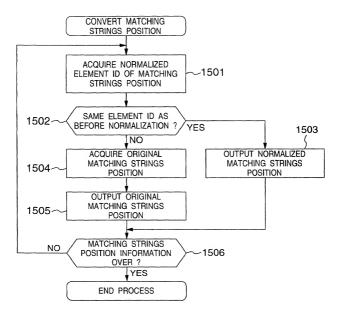
CHARACTER STRING: "STRUCTURED DOCUMENT IS...

NORMAL- IZED ELEMENT ID	ELEMENT TYPE	ORIGINAL ELEMENT ID	CHARA STRI POSI	NGS TION
			AFTER NORMALIZATION	BEFORE NORMALIZATION
7	DOCUMENT	0		
8	ELEMENT	3	_	
9	CDATA	5	0-5	0-5

FIG. 14

	<matching s<="" th=""><th>TRINGS POS</th><th>ITION IN</th><th>FORMATION></th><th><u> 140</u></th><th>01</th></matching>	TRINGS POS	ITION IN	FORMATION>	<u> 140</u>	01
	NORMALIZED ELEMENT ID	MATCHI	NG STRI	NGS POSITION		
Ī		START POS	ITION	LENGTH		
	2	0		10		
Ī	9	0		10		
_		,		/ERT TO INAL POSITION		
					<u> 1</u> 4	102
	ORIGINAL ELEMENT ID	MATCH	ING STR	INGS POSITION		
		START PO	SITION	LENGTH		
	2	0		10		
	5	0		6	-	

FIG. 15



<FLOWCHART FOR MATCHING STRINGS POSITION ACQUISITION>

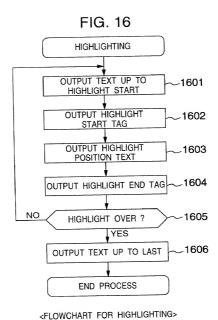
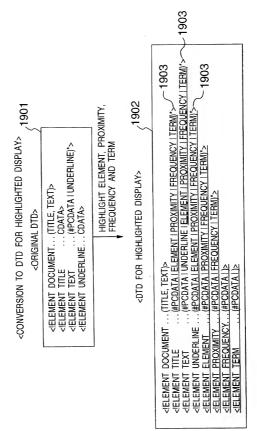


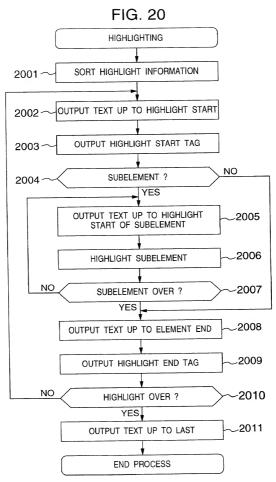
FIG. 17
<MATCHING STRINGS POSITION INFORMATION>

	_/ 17	702	₅ 1701
ELEMENT ID	MATCHING CONDITION	MATCHING STR	INGS POSITION
		START POSITION	LENGTH
2	TERM	0	10
9	FREQUENCY	0	10
9	ELEMENT	0	50
9	TERM	30	4
9	TERM	36	4
9	PROXIMITY	30	10

FIG. 18

<higi< th=""><th>HLIGHTING METHOD DEFINIT</th><th>1801</th></higi<>	HLIGHTING METHOD DEFINIT	1801
1802	_/ 1803	₅ 1804
MATCHING CONDITION	HIGHLIGHTING METHOD	HIERARCHY INFORMATION
TERM	RED	1
FREQUENCY	FONT LARGE	1
PROXIMITY	UNDERLINE	2
ELEMENT	ITALIC	3





<FLOWCHART FOR MATCHING STRINGS POSITION ACQUISITION>

<DOCUMENT>
<ITILE><ITILE><ITILE><ITILE>
<ITILE>
<ITILE
<ITI

FIG. 22

EXAMPLE OF HIGHLIGHTED DISPLAY>

STRUCTURED DOCUMENT IS A DOCUMENT WITH [TAG] [INSERTED] IN TEXT..

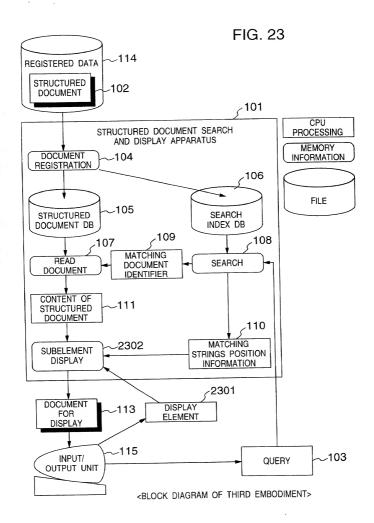
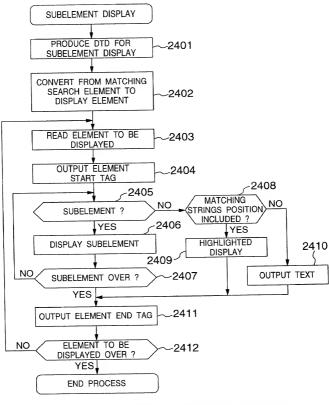


FIG. 24



<FLOWCHART FOR DISPLAY OF STRUCTURED DOCUMENT>

FIG. 25

<CONVERSION TO DTD FOR SUBELEMENT DISPLAY> 2501 <ORIGINAL DTD> <!ELEMENT DOCUMENT . . . (TITLE, TEXT)> ... CDATÁ> <!ELEMENT TITLE ... (#PCDATA | UNDERLINE)*> <!ELEMENT TEXT ... (#PCDAT
<!ELEMENT UNDERLINE... CDATA> MAKE POSSIBLE SUBELEMENT EXTRACTION ADD HIGHLIGHT 2502 <DTD FOR SUBELEMENT DISPLAY> <!ELEMENT DOCUMENT 00 (TITLE ?, TEXT ?)> <!ELEMENT TITLE ... (#PCDATA | HIGHLIGHT)*> 00(#PCDATA | UNDERLINE | HIGHLIGHT)*> <!ELEMENT TEXT <!ELEMENT UNDERLINE ... (#PCDATA | HIGHLIGHT)*> <!ELEMENT HIGHLIGHT ... (#PCDATA)> 2503 <EXAMPLE OF SGML WITH SUBELEMENT EXTRACTED> <TITLE> <HIGHLIGHT> STRUCTURED DOCUMENT </HIGHLIGHT> </TITLE>

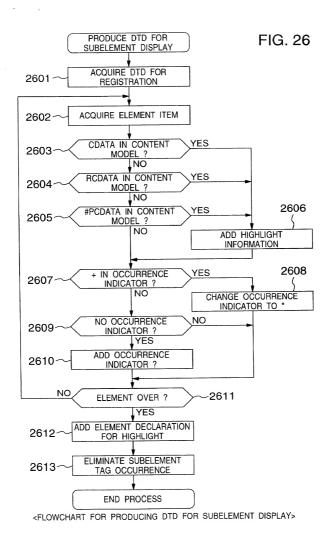
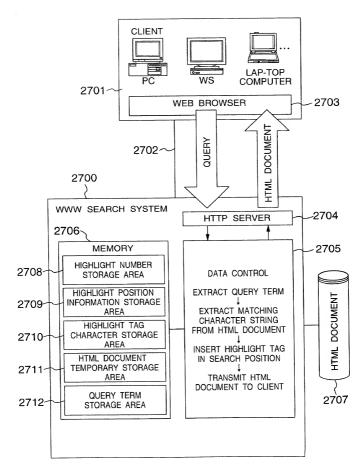


FIG. 27



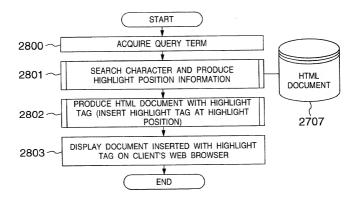
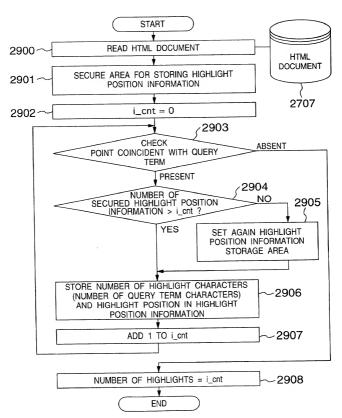
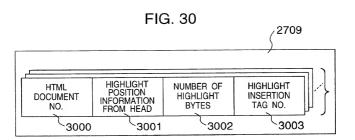


FIG. 29





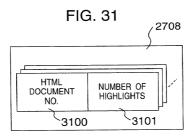
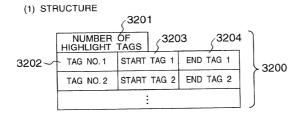


FIG. 32



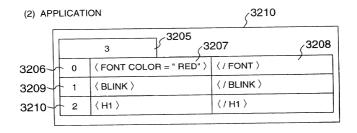
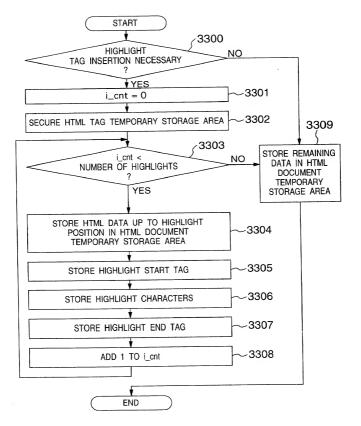
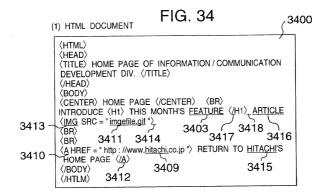


FIG. 33





(2) DISPLAY SCREEN



(3) HIGHLIGHT POSITION INFORMATION STORAGE AREA

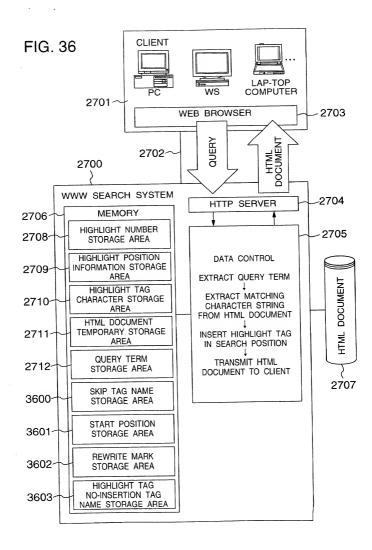
HTML DOCUMEN	_	HIGHLIGI POSITIO IFORMAT	N	NUMBER HIGHLIGH		HIGHLIG INSERTION	NC	1	≻3402
NO.		ROM HE		4		1	<i>J.</i>	\int	× 3402
(3404	1	34	05	340	06	[\] 340	7	

FIG. 35

```
3500
(1) HTML DOCUMENT AFTER HIGHLIGHT TAG INSERTION
   (HTML)
   (HEAD)
   (TITLE) INFORMATION / COMMUNICATION DEVELOPMENT DIV.
   HOME PAGE (/TITLE)
   (/HEAD)
   (BODY)
   (CENTER) HOME PAGE (/CENTER) (BR)
  INTRODUCE (H1) THIS MONTH'S (BLINK) FEATURE (/BLINK)
   (/H1) ARTICLE
  (IMG SRC = " imgefile.gif ")
                                         3501
                                                             3502
   (BR)
   (BR)
   \(\text{A HREF} = \"\text{http}: \//www.\text{hitachi.co.jp}\"\rightarrow \text{RETURN TO HITACHI'S HOME PAGE}\)
  \langle A \rangle
   (/BODY)
   (/HTLM)
```

(2) DISPLAY SCREEN AFTER HIGHLIGHT TAG INSERTION





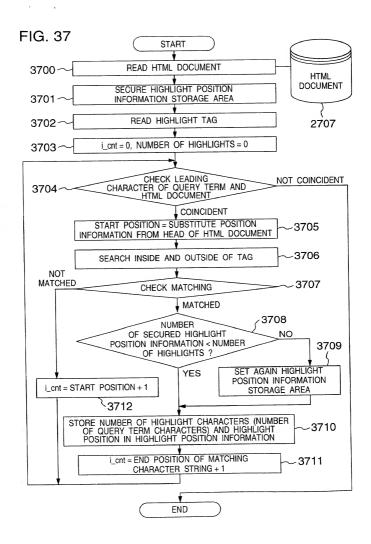
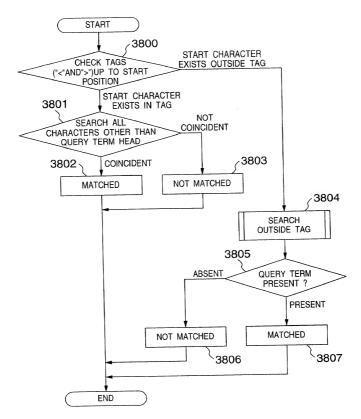


FIG. 38



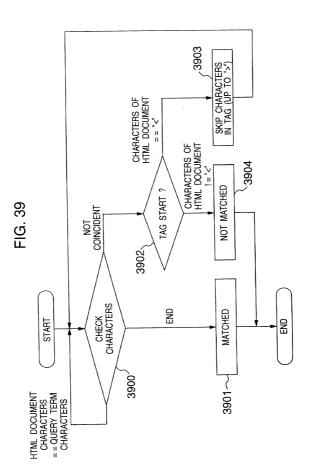


FIG. 40

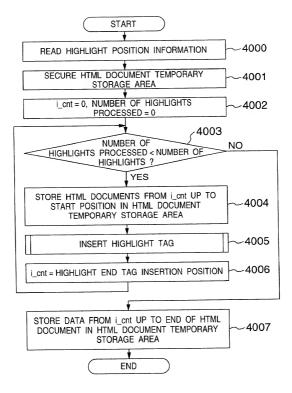


FIG. 41

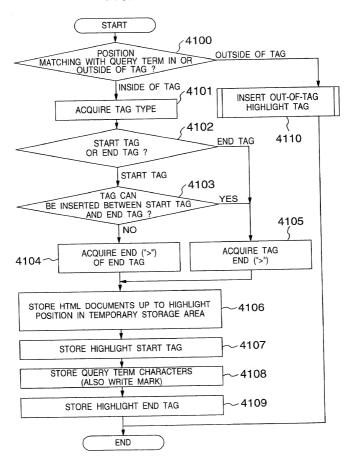


FIG. 42 START 4200 START NO CHARACTER SURROUNDED BY START TAG AND END TAG ? YES 4201 TAG CAN BE YES INSERTED BETWEEN START TAG AND END TAG ? 4209 NO STORE HTML DOCUMENT UP SKIP HTML DOCUMENT UP TO PREVIOUS MATCHING 4202 TO END TAG (</>) CHARACTER STORE UP TO END TAG 4203 4210 STORE HIGHLIGHT STORE HIGHLIGHT START TAG 4204 START TAG STORE RE-DISPLAY MARK 4205 4211 STORE QUERY TERM STORE QUERY TERM 4206 CHARACTER STRING CHARACTERS STORE HIGHLIGHT END TAG STORE HIGHLIGHT END TAG 4207 ^ 4208 UNPROCESSED UNPROCESSED 4212 PORTIONS **PORTIONS EXIST** EXIST PROCESS **PROCESS** OVER ? OVER ?

4213

END

END

END

FIG. 43

<DOCUMENT. TITLE> : "STRUCTURED DOCUMENT" {BLUE} AND <DOCUMENT. TEXT> (CORRUGATED UNDERLINE) : ("STRUCTURED DOCUMENT") OR C<10 {REVERSE} ("TAG", "INSERT")

FIG. 44 <MATCHING STRINGS POSITION INFORMATION>

4401

4403 4402 MATCHING STRINGS HIGHLIGHTING ELEMENT MATCHING **POSITION** ID METHOD CONDITION START LENGTH POSITION **BLUE** TERM 10 2 0 9 **FREQUENCY** 0 10 CORRUGATED ELEMENT 0 50 9 UNDERLINE TERM 9 30 4 TERM 36 4 9 REVERSE **PROXIMITY** 9 30 10

<CONVERSION TO DTD FOR HIGHLIGHTED DISPLAY IN SIXTH EMBODIMENT>

1901	٨	NOI	4501
<original dtd=""></original>	<pre></pre> <pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre><pre></pre><pre></pre><pre></pre><pre></pre><pre></pre><pre><pre><pre><pre><pre><pre><pre><pre><pre><pre><pre><pre><pre><pre><pre><</pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre>	ADD HIGHLIGHT INFORMATION FOR DISPLAY DOCUMENT	<pre><dtd display="" for="" highlighted=""></dtd></pre>

ACELEMENT TOCUMENT ACELEMENT TITLE ACELEMENT TEXT ACELEMENT UNDERLINE ACELEMENT CORRUGATED UNDERLINE ACELEMENT REVERSE ACELEMENT REVERSE ACELEMENT REVERSE ACELEMENT PONT LARGE	### ### ##############################	NE I FONT LARGE I REVERSE)'>
	(#PCDATA)>	

«Corrugated Underline» «Underline» «Corrugated Underline» «Font Large» document «Pont Large» document «Pont Large» (S a document ... «Corrugated Underline» in Which «Reverse» «Reverse» (Red» 18 gred» is gred» in Nerted «Red» «Reverse» in Text <underline> <<u>corrugated underline</u>> <<u>font large></u> Structured <<u>/font large></u> <TITLE> <BLUE> STRUCTURED DOCUMENT </BLUE> </TITLE> </DOCUMENT> DOCUMENT>

FIG. 47

<EXAMPLE OF HIGHLIGHTED DISPLAY>

STRUCTURED DOCUMENT IS A DOCUMENT WITH ITAG INSERTED IN TEXT....